

University-National Park Energy Partnership Program



Presented by
Terry Brennan, Green Energy Parks Coordinator, NPS
James Winebrake, UNPEPP Director, RIT
2004 Facilities and Asset Management Conference
Orlando, FL

Overview

- Barriers to EE&RE Activities at Parks
- The University-National Park Energy Partnership Solution
 - Mission
 - History
 - Activities
 - Participants
 - Outcomes
- Conclusion

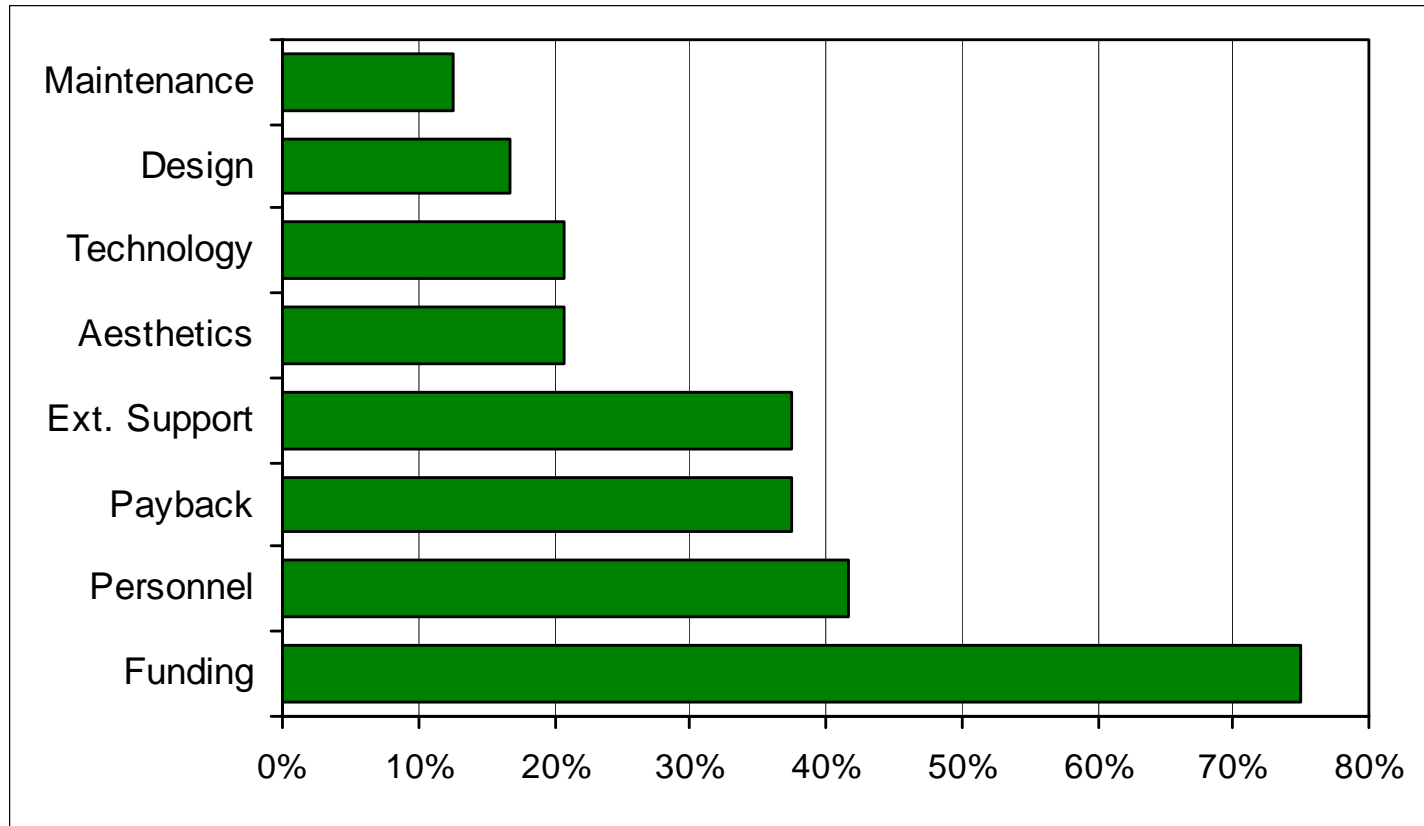


Barriers to EE&RE at Parks

- Many successes at National Parks...
 - PV systems
 - Lighting and HVAC upgrades
 - Water saving measures
 - Building envelope retrofits
- ...but implementation barriers still exist



Barriers to EE&RE at Parks



NOTE: From survey of 24 parks with visitation < 5M visitors/yr.



Barriers to EE&RE at Parks

- “Funding...and writing grants takes too much time”
- “Lack of contracting and purchasing assistance”
- “Need assistance in calculating costs and energy savings”
- “Need help in design work and then construction”
- “No time or personnel to research alternatives”
- “Engineering services must exist to develop project”



UNPEPP: Mission

The University-National Park Energy Partnership Program (UNPEPP) is a national program that forms partnerships between universities and national parks to provide energy services to the parks and educational opportunities to university students.



In accomplishing its mission, UNPEPP expands the abilities of national parks to meet their energy needs cost-effectively.



UNPEPP: History

- Developed by NPS, USDOE, and JMU
- Initial pilot between JMU and SHEN 1997-98
- Currently housed at Rochester Institute of Technology
- Operates under the *Green Energy Parks Program*
- Has developed and supported 30 partnerships
- Has supported R&D, policy development, and partnerships with the private sector



UNPEPP: Activities

- Provides grants to universities to fund energy projects at parks
- Funds used for time, equipment, and research expenses
- Parks and universities sign MOU stating their partnership and work expectations
- Grants range from \$10k-\$20k per partnership



UNPEPP: Activities

- **Projects have included:**
 - energy audits (computer simulation/thermal envelope assessments)
 - solar power design analysis
 - fuel cell feasibility studies
 - PV-panel installation
 - utility bill analysis
 - energy data collection



UNPEPP: *Example Partnerships*

- Georgia Tech and Kings Mountain National Military Park, Tuskegee Institute, and Andersonville
- Humboldt State and Redwood National Park
- James Madison University and Shenandoah NP
- South Dakota State University and Yellowstone
- UDEL and Assateague Island National Seashore
- Univ. of Michigan and Sleeping Bear Dunes National Lakeshore



UNPEPP: *Example Partnerships*

- Utah State University and various parks in Utah
- Univ. of Buffalo and Theo. Roosevelt Inaugural NHS
- Univ. of Colorado-Boulder and Rocky Mountain NP
- UMASS-Lowell and Lowell National Historic Site
- Univ. of Washington and Crater Lake National Park
- West Virginia University and New River Gorge National River



UNPEPP: Outcomes

- **30** partnerships at **45** parks, involving
 - **30** faculty members
 - **100** students
 - Many park personnel, and
 - **Countless** park visitors



UNPEPP: Outcomes

■ Energy audits:	11
■ Renewable energy design analyses:	17
■ Alternative fuel feasibility studies:	3
■ Fuel cell feasibility studies:	3
■ Utility database management:	4
■ Public education:	2



UNEPP: Outcomes 1999-2003

- Energy and cost savings
- Renewable energy design and implementation
- Leveraged funding
- Student education
- Public education
- Emissions reductions
- Training park personnel
- Long term relationship building
- Professional dissemination of results



UNPEPP: Energy and Cost Savings

- For energy audit projects, annual energy savings ranged from:

\$1,400 to \$26,000

- Average payback:

2 years



UNPEPP: Next Steps

- FY04 RFP closed (3/1/04)—review complete
- FY04 contracts established by June
- FY05:
 - Expand university pool and build new partnerships
 - Increase opportunities for students from non-partnering universities
- See www.energypartnerships.org for more information



The Value of UNPEPP

- Cost of energy conservation measure ...

\$15,000

- Payback period on investment...

2 years

- Educating the next generation of energy professionals...

Priceless



Conclusion

Discussion, Questions, and Comments

For more information contact:

Terry Brennan, NPS (terry_brennan@nps.gov)

James Winebrake, RIT (jwinebrake@mail.rit.edu)